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EXAMINER

YEH, EUENG NAN

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/786,900	Applicant(s) HUANG, WEI-FENG	
	Examiner EUENG-NAN YEH	Art Unit 2624	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 19 August 2008.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-77 is/are pending in the application.
- 4a) Of the above claim(s) 2,3 and 36-70 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,4-35 and 71-77 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>Aug 19, 2008</u> . | 6) <input type="checkbox"/> Other: _____ |

FINAL ACTION

Response to Amendment

1. The following Office Action is responsive to the amendment and remarks received on August 19, 2008. Original claims 2-3 and 36-70 were canceled and claims 71-77 are added. Claims 1, 4-35 and newly added claims 71-77 remain pending.

Claim Rejections - 35 USC § 101

2. 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

Claims 1, 4-17, 28-32, and 71 are rejected under 35 U.S.C. 101 as not falling within one of the four statutory categories of invention. While the claims recite a series of steps or acts to be performed, a statutory “process” under 35 U.S.C. 101 must (1) be tied to another statutory category (such as a particular apparatus), or (2) transform underlying subject matter (such as an article or material) to a different state or thing (Reference the May 15, 2008 memorandum issued by Deputy Commissioner for Patent Examining Policy, John J. Love, titled “Clarification of ‘Processes’ under 35 U.S.C. 101” – publicly available at USPTO.GOV, “memorandum to examining corp.”). The instant claims neither transform underlying subject matter nor positively tie to another statutory category that accomplishes the claimed method steps, and therefore do not qualify as a statutory process. In order for a process to be “tied” to another statutory category, the

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structure associated with another statutory category must be positively recited in a step or steps significant to the basic inventive concept, and NOT just in association with statements of intended use or purpose, insignificant pre or post solution activity, or implicitly. . For example the independent claim 1 act A: converting image, act B: perform image processing, and act C: converting image and none of above acts positively "tied" to another statutory category.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1, 4-17, and 28-32 are rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Acharya (US 2002/0101524 A1, hereinafter referred to as Acharya002), Yeo et al. (US 6,738,509 B2), and Muraki (US 2003/0219156 A1).

Regarding claim 1, Acharya002 discloses a color image processing system comprising:

act A: converting a single first image data from a first color space into a second image data that corresponds to a second color space (as depicted in figure 1A, image data

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converted from 8-bit Bayer color space to 24-bit RGB. Figure 1B depicted the conversion from 24-bit RGB space to 24-bit YCrCb. "Once each pixel of the image is at a full RGB color resolution (either through color interpolation or by virtue of having been captured at full color resolution), another process known as color space conversion may be performed. Depending on the rendering device or particular application for which the full color image is destined, the RGB "color space" (of an interpolated image, see FIG. 1(a)) may need to be converted ..." in paragraph 10, line 1. The conversion equations from RGB color space to YCrCb color space are listed in paragraph 28);

the single first image data includes a first pixel and a second pixel, wherein the first pixel corresponds only to a first color component and the second pixel corresponds only to a second color component that is different from the first color component (as depicted in figure 1A for the 8-bit Bayer pattern "The Bayer pattern (see FIG. 1(a)), when three color planes are sub-sampled sampled, is characterized by including on a first row of an image, alternating pixels of Red and Green, and then on a next row alternating pixels of Blue and Green. Thus, the Bayer pattern for the first four rows of pixels (with each pixel typically an 8-bit value) is as follows (with the rows thereafter repeating the same pattern):

G R G R G R . . .

B G B G B G . . .

G R G R G R . . .

B G B G B G . . .

As a result, each pixel location contains a value for a single color only” in paragraph 7, line 14).

Acharya002 discloses that color space can be converted to various desired color spaces depending on the rendering device or particular application. Acharya002 does not explicitly disclose image processing on the selected color space. Furthermore, Acharya002 does not explicitly teach the conversion from other color space to first color space.

Yeo, in the same field of endeavor of color image processing (“compressing multi-spectral images in different spectral spaces and transforming images from one spectral space to another” at column 1, line 14), teaches image processing under various color spaces “a multi-spectral image is a collection of two or more monochrome images of the same scene. Multi-spectral images can be described in any one of a plurality of known spectral or color spaces. For example ... RGB color spectral space ... CIE (Commission Internationale de L'Eclairage) $L^*a^*b^*$, CIE XYZ, CIE $L^*u^*v^*$, CIE YUV, CMY ... CMYK ... YCbCr, YIQ, HIS, and HSV ...” at column 1, line 20. As depicted in figures 2 and 3, numeral 105 is the codec processing in the second color space to form a processed image data (claim act B).

It would have been obvious at the time the invention was made to one of ordinary skill in the art would have been motivated to include the color image processing system Acharya002 made, with color space data processing as taught by Yeo, because there are practical applications for color space and data processing: “Most JPEG images are compressed in the YCbCr color space. For MPEG-1 this is the only allowed color

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space” at Yeo column 2, line 36, and “image editors or rendering devices such as printers do not use RGB color space in manipulating or rendering images ...” in Acharya002 paragraph 10, line 8.

The Acharya002 and Yeo combination does not explicitly disclose the conversion to the first color space.

Muraki, in the field of endeavor of “image synthesis apparatus and image synthesis method for synthesizing images” in paragraph 3, line 1, teaches the image synthesizing processing in figure 14 “shows a fourth embodiment of the present invention in which the original YC data already picked-up and stored in the form of the YC data in the external memory 8 is synthesized with the picked-up image data (Bayer data) taken in by the image pickup device 2” in paragraph 77, line 1. As shown in figure 2, the pick-up image data “Bayer data output from the unit circuit 4 (hereinafter referred to as the picked-up image data (Bayer data)) is input (step SA2). As described later, a process of generating the picked-up YC data (color process) is executed based on the picked-up image data (Bayer data) as described later (step SA3). After executing a synthesization (multiplication) YC data generating process as described later (step SA4), the image data obtained by the synthesization YC data generating process (hereinafter referred to as the synthesized YC data) is displayed in the display device 7, and also stored in the memory 10 or the external memory 8 (step SA5)” in paragraph 43, line 7. Figure 2 illustrates the claimed act A: Bayer color space to second color space. As depicted in figure 16, step SJ1 contains low pass filter processing for the original YC data which is the claimed act B: perform image processing. And step SJ2

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converting YC data to Bayer format, such as GRGRGR ...BGBGBG..., which corresponds to the first color space as stated in the claimed act C.

It would have been obvious at the time the invention was made to one of ordinary skill in the art would have been motivated to include the color image processing system of the Acharya002 and Yeo combination, with color space conversion to the first color space as taught by Muraki, in order to have an application "for synthesizing images" in Muraki paragraph 3, line 2.

Regarding claim 4, the first color space is an RGB raw space (as depicted in Acharya002 figure 1A 8-bit Bayer pattern "In digital still and video cameras and certain other imaging devices, raw images are first represented as rectangular row and column of pixels with each pixel having the intensity value of a particular color only. In the case of RGB (Red, Green and Blue) sub-sampling imaging devices, images are obtained and stored in a particular pattern. FIG. 1(a) shows are such pattern ..." in Acharya002 paragraph 7, line 6).

Regarding claim 5, the second color space is a single color component color space (discussed in claim 1, the color space can be described in any one of a plurality of known color spaces. The second color space is a single color component color space).

Regarding claim 6-7, the second color space is a multiple color component color space (discussed in claim 1, the color space can be described in any one of a plurality of known color spaces. See also "... color space 2 may be YCbCr color space. Other color space combination are also possible ..." at Yeo column 4, line 49).

Regarding claim 8-10, the third color space is a single color component color space (discussed in claim 1, the color space can be described in any one of a plurality of known color spaces. The third color space can be a single color component color space, a multiple color component color space, or RGB raw space, or YCbCr space).

Regarding claim 11, act A further comprises using one or more temporary buffers to store the second image data (as depicted in Acharya002 figure 6, numerals 711 and 734 for storages. See also "... a system unit having a central processing unit (CPU) and associated volatile and non-volatile memory, including all RAM ...CD-ROM drive ..." at Yeo column 10, line 42).

Regarding claim 12, act B further comprises using one or more temporary buffers to store the processed image data (discussed in claim 11).

Regarding claim 13, act B further comprises image data compression (as depicted in Yeo figure 9 for data compression process. See also Muraki figure 16, step SJ1 for low pass filter as a smoothing filter).

Regarding claims 14, 28, act A further comprises performing a color interpolation for converting each pixel that is associated with the first image data from a single color component to multiple color component to form a corresponding interpolated pixel (as depicted in Acharya002 figure 1A from 8-bit Bayer pattern to 24-bit RGB. For the performance of color interpolation "...To interpolate the Green color component G'01, one method of color interpolation would average together adjacent Green color plane associated pixel values which are, for instance, G00, G11 and G02. Thus G'01 might be determined by computing $(G00+G11 +G02)/3$..." in Acharya002 paragraph 27, line 15. This interpolation is the nearest neighbor interpolation (claim 28). More complete discussion can be found in paragraph 27).

Regarding claim 15, applying a conversion equation to each interpolated pixel, wherein the conversion equation is selected based on the second color space ("For instance, when converting from RGB color space to the YCrCb color space, a set of conversion equations are defined such that for a given pixel location (ij) each component Y, Cr and Cb is a linear combination of R, G and B components ..." in Acharya002 paragraph 28, line 1. More complete discussion can be found in paragraph 28).

Regarding claim 16, act A further comprises applying a conversion equation to each pixel, wherein the conversion equation is selected based on the second color

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space (as depicted in Acharya002 figure 2, shows the steps of color space pixel by pixel conversion. Detail discussions about the conversion formula used can be found from paragraphs 27 to 29).

Regarding claim 17, color interpolation further comprises deriving missing color components for each pixel from the pixel's neighboring pixels, wherein the neighboring pixels contain the missing color components (as discussed in claim 14, $G'01 = (G00 + G11 + G02)/3$ where $G'01$ is the missing color components, $G00$, $G11$, $G02$ are neighboring pixels of $G'01$. Reference Acharya002 figure 1A for details).

Regarding claim 29, act C further comprises re-mapping each pixel of the processed image data into the selected color space (as depicted in Acharya002 figure 1C, the 24-bit YCrCb data decimated to 12-bit YCrCb).

Regarding claim 30, act C further comprises applying a conversion equation to each pixel of the processed image data, wherein the conversion equation is selected based on a selected color space from the set of color spaces (as depicted in Yeo figure 4, numeral 402 or figure 5, numeral 502 shows the color space conversion equations).

Regarding claim 31, after applying the conversion equation, re-mapping each pixel of the processed image data into the selected color space (as discussed in claim

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30 conversion equation applies to each pixel; claim 29 to re-map each pixel of the processed image data into the selected color space).

Regarding claim 32, re-mapping includes dropping undesired color components (as depicted in Acharya002 figure 1C and figure 4, the undesired color components of Cb and Cr are dropped so the file size can be reduced).

Regarding claim 71, wherein act A, act B, and act C are all performed by a digital signal processor (DSP) of an imaging capture system, wherein the imaging capture system includes an imaging capture device coupled to output the first image data to the DSP (as depicted in Muraki figure 1, numeral 6 is the DSP, numeral 2 is the image capture device, "signal output from the image pickup device 2 is sampled, amplified, and digitized by the unit circuit 4. The Bayer data (RGB data) is sent to an image processing circuit/CPU 6, and is subjected to various signal processes (including a color process) and image process by the process of the image processing circuit/CPU 6" in Muraki paragraph 38, line 3).

3. Claims 18-27 and 33-35 are rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Acharya002, Yeo, and Muraki as applied to claim 1 discussed above, and further in view of Rashkovskiy et al. (U.S. 6,252,577 B1).

Regarding claim 18, the Acharya002, Yeo, and Muraki combination discloses color space interpolation. The Acharya002, Yeo, and Muraki combination does not explicitly disclose other possible color space interpolation acts and various filters.

Rashkovskiy, in the same field of endeavor of “digital image processing” at column 1, line 5, discloses the details of interpolation from a single color component to a multiple color component: “A method according to an embodiment of the invention operates to partially determine the scaled image, leaving missing components in the second and third sets of pixels. The partial determination may be done using linear mathematical operators that combine interpolation and low pass filtering and are applied to selected regions of the original image” in column 2, line 30. Furthermore, “the well known Hamming filter works particularly well and is relatively simple to implement” at column 6, line 66. “each pixel in the original image is converted from having a single color component into one pixel having multiple color components ... by interpolating the additional color components of a pixel based on the intensities and colors of its neighboring pixels ...” at column 1, line 37. Thus, the interpolation is based on nearest neighbor interpolation. The said selected region of the original image is a 3X7 array with 21 Bayer pattern coefficients (at column 4). The interpolation “may take on a larger or smaller size. In addition, the array need not have an odd number of coefficients on each side” at column 5, line 1. Equation (1) (at column 5) is the interpolation formula used where $cg(i,j)$ is the weighting coefficient. For a 1X3 region, the missing color component $G(2)$ can be derived from the pixel’s closest previous $G(1)$ and next pixel

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G(3) in a horizontal direction (act P for claim 18). G(2) can be the averaged output if the weighting factor c_g is 0.5. Otherwise, G(2) is the weighted output.

It would have been obvious at the time the invention was made to one of ordinary skill in the art to implement the color space transformation methodology of the Acharya002, Yeo, and Muraki combination, with more single/multiple color interpolation options as taught by Rashkovskiy, in order not only to explicitly describe the steps of color interpolation processing for “efficiently downscaling images and for transferring images” at Rashkovskiy column 1, line 6, but also to avoid “any aliasing effects” at Rashkovskiy column 7, line 31.

Regarding claims 19-20 (discussed in claim 18, for the averaged output and the weighted output).

Regarding claims 21-22, act S further comprises averaging pixels corresponding to each missing color component from the previous line of pixels (With proper selection of the size of target area, Rashkovskiy Equation-1, at column 5, and 2, Equation-2, at column 6, can be used to derive averaged or weighted pixel values corresponding to each missing color component from the previous line of pixels).

Regarding claims 23, the fixed number is based on missing color components from previous frames (“... missing components, however, may now be readily computed using conventional interpolation techniques as will be apparent to those of ordinary skill

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in the art ...” at Rashkovskiy column 4, line 1. Thus, the fixed number is based on missing color components from previous frames is one acceptable alternative method).

Regarding claim 24, low-pass filters used (“next step is to determine the filtering that will be applied to the selected region to generate the G component of the target pixel in the scaled image ... Equation-3 ...” at Rashkovskiy column 6, line 13. “Any one of a number of different filters can be used for $h(j)$, but the well known Hamming filter works particularly well ...” at Rashkovskiy column 6, line 64. Where Hamming filter is a low pass filter and variable $G'(j)$ in equation-3 is the value after interpolation).

Regarding claims 25-27, using filters before, after, before and after performing the color interpolation (as discussed in claim 24, performing filter after interpolation. However, Equations-4 and 5 of Rashkovskiy at column 6, perform the filter before interpolation for $G(i)$ is the value before interpolation. Without departing from the essence of Rashkovskiy’s methodologies, filters can be applied before and after performing the color interpolation).

Regarding claims 33-35, using filters before, after, before and after dropping undesired color components (discussed in claims 25-27 this filter can be applied before, after, and before and after color interpolation. Without departing from the scope and spirit of Rashkovskiy’s methodologies, this filter can also be applied before, after, and before and after dropping undesired color components).

4. Claims 72-77 are rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Acharya002, Yeo, and Muraki as applied to claim 1 discussed above, and further in view of Guarnera et al. (US 7,199,825 B2).

Regarding claim 72, the Acharya002, Yeo, and Muraki combination discloses a color space transformation system. The Acharya002, Yeo, and Muraki combination does not explicitly disclose the CMOS image sensor.

Guarnera, in the field of endeavor of image generating system (“digital camera of the kind that produces a compressed image signal” at column 1, line 13), teaches that “[a] typical DSC is a stand-alone unit that includes all the circuitry and processes to create an image data file that represents an image. In addition to the sensors (typically charge coupled devices (CCDs) or CMOS circuits) that are used to create the Bayer pattern, DSCs include a mechanism to process the output from the CFA and turn it into a common data format, such as a JPEG (Joint Photographic Experts Group) file ...” at column 1, line 38.

It would have been obvious at the time the invention was made to one of ordinary skill in the art to enable the color image processing system of the Acharya002, Yeo, and Muraki combination, with CMOS image sensor as stated by Guarnera that CMOS is one of the typical image sensors to create the Bayer data by the DSCs (digital still cameras).

Regarding claim 73, the imaging capture system further includes a CPU coupled to control the imaging capture system (as depicted in Muraki figure 1, numeral 6 is the CPU).

Regarding claim 74, the imaging capture system further includes a memory coupled to the DSP and the CPU, the memory including one selected from the group consisting of: SRAM, DRAM and ROM (as depicted in Muraki figure 1, numeral 10, “memory 10 is a work RAM” in paragraph 41, line 4. See also Acharya002 figure 6, numeral 734 “...image memory unit 734, which may be a ROM, RAM or other storage device such as a fixed disk ...” in paragraph 66, line 9).

Regarding claim 75, the imaging capture system further includes a persistent storage coupled to store the first, second, and third image data, the persistent storage including one selected from the group consisting of: a flash memory, an SD card, an MMC card, a CF card, a memory stick card, and a hard disk (as depicted in Muraki figure 1, numeral 8, “file is stored in an attachable/detachable external memory 8 including a flash memory” in paragraph 40, line 10).

Regarding claim 76, the imaging capture system further includes an interface to couple the imaging capture system to a computer system, the interface including one selected from the group consisting of: USB 1.1, USB 2.0, IEEE 1394, LVDS, UART, SPI, I2C, pWire, EPP/ECP, CCIR601, CCIR656, IrDa, and Bluetooth (Guarnera teaches

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“...[t]he data channel can be any transmission means, for example wired (Serial, LAN, USB), or wireless (IR, Bluetooth, cellular), and the like” at column 3, line 11).

Regarding claim 77, the imaging capture system is a device selected from the group consisting of: a video camera, a surveillance camera, a digital still camera, a digital camcorder and a PC camera, and wherein the computer system is a device selected from the group consisting of: a cellular phone, a smart phone, a network device, a PDA and a personal computer (as depicted in Acharya002 figure 6, “Illustrated is a computer system 710, which may be any general or special purpose computing or data processing machine such as a PC (personal computer), coupled to a camera 730. Camera 730 may be a digital camera, digital video camera, or any image capture device or imaging system, or combination thereof and is utilized to capture an image of an object/scene 740” in paragraph 66, line 1).

Response to Arguments

5. Summary of Applicant's Remarks:

“Therefore, since Yeo recites that the output of transformer 304 is a multi-spectral image, the reference necessarily fails to disclose a third image data that includes a third pixel and a fourth pixel, wherein the third pixel corresponds only to the first color component and the fourth pixel corresponds only to the second color component, as recited in amended claim 1. Thus, neither reference, whether taken

individually or in combination, disclose, teach or suggest converting to a third image data as presently recited in claim 1” at response page 12, line 5.

Examiner's Response:

Applicant's argument is moot in view of the new grounds of rejection advanced herein above. Specifically, the Muraki (US 2003/0219156 A1) reference now teaches the concept of converting image data corresponding to Bayer color space. Refer to the rejections above for the further discussion.

Conclusion

6. Applicant's amendment is rejected in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

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7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Eueng-nan Yeh whose telephone number is 571-270-1586. The examiner can normally be reached on Monday-Friday 8AM-4:30PM EDT

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vikkram Bali can be reached on 571-272-7415. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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